

**REMARKS**

Claims 1 and 3-27 are pending in this application, of which claims 1 and 8 have been amended. Claim 2 has been canceled. No new claims have been added.

Claims 1-3, 22 and 26 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent 7,002,733 to Dagenais et al. (hereafter, "Dagenais et al.") in view of U.S. Patent 6,646,975 to Uchizaki et al. (hereafter, "Uchizaki et al.").

Applicant respectfully traverses this rejection.

Dagenais et al. discloses an optical amplification device including a depolarizer for reducing the polarization sensitivity requirements on a semiconductor optical amplifier ("SOA") by changing the input to the SOA from having an arbitrary (unknown) polarization state to a known (depolarized) state. The depolarizer receives an input optical signal and outputs a depolarized optical signal, and an SOA receives the depolarized optical signal and outputs an amplified optical signal.

FIG. 6 of Dagenais et al. shows two separate SOAs, in contrast to the present invention, in which a single SOA with two separate inputs and outputs is used.

Uchizaki et al. discloses a semiconductor laser array including a plurality of index-guided semiconductor lasers different in oscillation wavelength is made by collectively controlling their double transverse modes and collectively processing them to form their current-blocking structures and buried layers.

Column 14, lines 34-40 disclose:

FIG. 9 is a cross-sectional view showing construction of a semiconductor laser array for two beams of oscillation wavelengths of 780 nm and 650 nm, taken as an example of the invention. In FIG. 9, 240 denotes a laser element portion for the oscillation wavelength 780 nm, and 241 is a laser element portion for the oscillation wavelength 650 nm. Their construction is roughly explained below.

Thus, Uchizaki et al. teaches lasers of two different wavelengths being input, in contrast to the present invention (and Dagenais et al.) which includes a “demultiplexer which is a polarization beam splitter for dividing the inputted light into two components that are orthogonal to each other,” as recited in claim 2 of the instant application. Thus, these references may not be combined to teach this feature of the present invention.

Accordingly, claim 2 has been canceled and its limitations have been added to claim 1.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 8, 9, 23 and 27 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Dagenais et al.

Applicant respectfully traverses this rejection.

As noted above, Dagenais et al. discloses two SOAs, in contrast to the present invention, as shown in FIG. 3, in which only one SOA 21 is shown.

Accordingly, claim 8 has been amended to recite this distinction.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 6-7, 12 and 17 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Dagenais et al. or Dagenais et al. in view of Uchizaki et al. and further in view of U.S. Patent 6,023,366 to Kinoshita et al. (hereafter, “Kinoshita et al.”).

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Applicant respectfully traverses this rejection.

Kinoshita et al. has been cited for teaching an ALC support structure but, like the other cited references, fails to teach, mention or suggest the feature as recited in claims 1 and 8, as amended, from which these claims depend.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

Claims 4-5, 10-11, 13-16, 18-21 and 24-25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Dagenais et al. in view of Uchizacki et al. and further in view of Kim et al. (previously applied) (and, in the case of claims 12 and 17, further in view of Kinoshita et al.).

Applicant respectfully traverses this rejection.

Kim et al. discloses a polarization insensitive semiconductor optical amplifier (SOA) in an optical amplifying element having a substrate and a multi-layer structure, crystal growth layer including an active layer formed on the substrate. The active layer is divided into first and second areas having different polarization modes. An electrode means independently applies currents to the first and second areas. Therefore, the polarization insensitive semiconductor optical amplifier is capable of separately controlling TE and TM polarization gains so as to approximately equalize the TE polarization gain to the TM polarization gain.

Although FIG. 2 of Kim et al. shows a TM area and a TE area, there is only one light input and only one light output path in single active layer 30.

This is in contrast to the present invention as shown in FIG. 1, in which there are two separate light inputs and two separate light outputs. This is because it has two of the structures

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shown in FIG. 2, as disclosed from page 7, line 27 to page 8, line 9 of the specification of the instant application. FIG. 1 shows two light inputs and two light outputs for the quantum dot optical amplifier 1 of the instant application.

The Examiner has urged that Kim et al. teaches the optical repeater wherein said demultiplexer and said multiplexer are monolithically integrated into a PLC with said semiconductor optical amplifier.

As noted above, Kim et al. fails to disclose either dual input and dual output construction recited in claim 1, from which claims 4-5, 13, 15, 18 and 20 depend, or the converter recited in claim 8, from which claims 10-11, 14, 16, 19 and 21 depend.

Thus, the 35 U.S.C. § 103(a) rejection should be withdrawn.

In view of the aforementioned amendments and accompanying remarks, claims 1 and 3-27, as amended, are in condition for allowance, which action, at an early date, is requested.

If, for any reason, it is felt that this application is not now in condition for allowance, the Examiner is requested to contact Applicant's undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

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In the event that this paper is not timely filed, Applicant respectfully petitions for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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PATENT TRADEMARK OFFICE

Enclosures: Petition for Extension of Time  
Check in the amount of \$450.00

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